

IX.—Horary Observations of the Barometer, Thermometer, and wet-bulb Thermometer, made at Calcutta on the 21st and 22nd of March, 1836. By Mr. H. BARROW, H. C. Mathematical Instrument-maker.

1836. Date.	Hour.	Barometer.	Attached Thermometer.	Wet Bulb Thermometer.	External Thermometer.	Barometer Reduced to 32°.	Depression of Wet Bulb Thermometer.	Remarks.
21 March	6 A.M.	29,975	74,0	68,8	69,5	,9879	5,2	Rain with thunder and lightning, which continued part of the next day.
	7	,998	74,0	68,0	70,0	,9902	6,0	
	8	30,016	75,0	68,0	74,0	,9917	7,0	
	9	,019	76,0	68,0	76,2	,9917	8,0	
	10	,031	77,0	69,2	79,5	,9926	7,8	
	11	,040	78,5	69,0	81,0	,9931	9,5	
	Noon.	,026	80,0	69,2	81,8	,9912	10,8	
	1	29,998	81,0	70,0	83,0	,881	11,0	
	2	,975	81,5	71,0	84,5	,856	10,5	
	3	,951	81,8	70,6	83,5	,831	11,2	
	4	,926	81,5	70,0	81,0	,807	11,5	
5	,926	80,5	69,3	80,0	,811	11,2		
6	,953	79,9	69,2	77,0	,839	10,7		
7	,938	77,1	69,7	71,0	,833	7,4		
8	,957	76,0	69,0	72,0	,855	7,0		
9	30,001	76,0	69,9	72,0	,899	6,1		
10	29,970	76,0	68,0	71,6	,868	8,0		
11	,951	74,9	67,5	71,0	,852	7,4		
22 Do...	Midnt.	,964	74,8	70,0	71,3	,865	4,8	
	1	,944	75,1	70,1	70,0	,845	5,0	
	2	,942	75,0	70,5	68,0	,843	4,5	
	3	,938	75,0	70,5	68,0	,839	4,5	
	4	,932	74,5	70,0	68,0	,834	4,5	
	5	,961	75,0	70,6	67,0	,862	4,4	
	6	,982	72,7	68,0	67,5	,889	4,7	
	7	30,000	71,4	68,0	70,5	,912	3,4	
	8	,015	73,0	70,0	74,0	,912	3,0	
	9	,030	74,6	69,5	74,0	,932	5,1	
	10	,040	74,5	69,3	74,5	,942	5,2	
11	,028	74,0	68,3	75,0	,932	5,7		
Noon.	,000	74,5	69,0	78,0	,992	5,5		
1	29,973	75,0	69,5	77,5	,874	5,5		
2	,947	75,5	69,0	83,0	,847	6,5		
3	,916	76,5	70,0	79,5	,813	6,5		
4	,904	77,2	69,5	80,0	,799	7,7		
5	,911	78,0	69,5	80,0	,803	8,5		
6	,916	77,5	70,0	77,2	,810	7,5		

The above observations were made with a Barometer in every respect the same as the one used on the 21st and 22nd of December last, except that the bulb of the attached Thermometer is inserted in the Barometer cistern to better ascertain the Temperature of the mercury. The reduction of the Barometer to 32° is made by the formula $t - 32 \times .003 \frac{B.}{30}$ and a constant .030 added for capillarity.

H. B.

Note.—On referring to my manuscript meteorological table for the month of March, I find that an error of .05 has been made in the printed entry of the two barometers at 10 A. M. on the 21st, which should stand 29,899 and 29,947. After correcting these, it will be found that to reduce Mr. BARROW's observations to terms of the barometer I have hitherto registered .015 must be added to the corrected column at 32°: and to compare them to the new standard by NEWMAN .029 must be deducted.

These discrepancies are nothing more than index errors; but as it is a matter of some importance to know which gives the correct altitude, and why an instrument commissioned with such precautions from the best maker at home should stand three or four hundredths of an inch *lower* than tubes made, filled, boiled, and measured in Calcutta; I have with Mr. BARROW's aid remeasured the scales of the several instruments respectively from 0 to the 30 inch mark, by a standard brass scale of TROUGHTON's at the temperature of 95°.

Mr. BARROW's scale was laid off by himself exactly.....	30,000 inches.
My compensation barometer to a scratch on the glass originally marked by myself with the same care, was found on remeasurement to be quite correct.....	} 30,000
NEWMAN's Strd. 1st trial 29,658 + 1,176 - 0,814 = 30,020	
2nd do. 28,746 + 1,176 + 0,100 = 30,022	
3rd do. 28,848 + 1,176 = 30,018	

The principal difficulty in measuring the column of NEWMAN's instrument was to find the distance from the lower end of the ivory cone (or the level of the mercury in the cistern) to the upper part of the cistern: this I made by several trials 1,173 to 1,176; Mr. BARROW made it 1,182 and 1,183; Mr. PEARSON 1,172: I have taken it at 1,176 as the mean, and feel confident the error of the whole measurement does not amount to 0,005 inch. The readings therefore of this instrument in every instance will be .020 too low.

I am reluctant to suppose Mr. NEWMAN should have sent me a barometer at such a vast cost so carelessly verified; but such seems to be the case from the above measurement, which is confirmed by the register; for allowing .009 for the expansion of the brass scale, and adding it to the index error above, we find almost the exact amount by which the new instrument stands lower than my former standard, which latter has been compared by three opportunities with the Royal Society's barometer and found to agree very closely. Mr. NEWMAN neglected to make this comparison, although I particularly requested it.

J. P.